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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/613,089 | 07/07/2003 | Larry Lee Wolff | 0101 | 5101 |
| 32366 | 7590 | 06/28/2004 | EXAMINER | |
| BRUCE E. WEIR 12 SPARROW VALLEY COURT MONTGOMERY VILLAGE, MD 20886-1265 | | | HA, NATHAN W | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2814 | |

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

10/613,089

Applicant(s)

WOLFF ET AL.

Examin r

Nathan W. Ha

Art Unit

2814

-- The MAILING DATE of this c mmunication appears on the c ver sheet with the c rrespondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-31 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/03.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Chow et al. (US 6,667,543, hereinafter Chow.)

In regard to claims 1, 11, and 20, in figs. 1-3, Chow discloses a method comprising:

bonding an optical semiconductor element 22 to a lead frame 12, the optical semiconductor element having a radiation-sensitive portion 26;

applying a transparent adhesive element 38 to at least the radiation-sensitive portion; and

applying an aperture member 40 to the transparent adhesive element.

IN regard to claim 2, Chow further discloses bonding an optical semiconductor element to a lead frame, the optical semiconductor element having a radiation-sensitive portion as mentioned above;

Selecting an aperture member; and

applying the aperture member to the transparent adhesive element. See above discussions.

In regard to claims 3, 12, and 21, wherein the aperture member is selected for a least one physical characteristic.

In regard to claims 4, 13, and 22, wherein the aperture member is selected and applied to the transparent adhesive element by a programmable pick-and-place semiconductor assembly machine, dispensing system, for example. See col.4, lines 62-64.

In regard to claim 5-6 and 14-15, wherein the optical semiconductor element is bonded to the printed circuit board with a bonding agent, an adhesive tape 24. See fig. 1.

In regard to claims 7, 16, and 27, Chow discloses the additional step of bonding at least a first connecting electrical conductor 32 between at least a first circuit contact 30 on the optical semiconductor element and at least a first lead 18 on the lead frame. See fig.1.

In regard to claims 8, 17, and 28, wherein the first connecting electrical conductor comprises a wire 32 fabricated from a metal selected from of gold. See col.4, lines 20-21.

In regard to claims 9, 10, 19, and 29-30, Chow further discloses additional step of encapsulating the optical semiconductor element, the transparent adhesive element, and the aperture member with an encapsulating agent, resin, 42, or 48. See col.5, line 1. See also, col.6, lines 36-38.

In regard to claim 24, the substrate, lead frame, provides an electrical conductor.

See fig. 1.

In regard to claims 25 and 26, wherein the optical semiconductor element is bonded to the substrate with a bonding agent 24, adhesive. See col. 4, line 1.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chow as applied to claims 1-30 above, and further in view of Hoffman, US 6,603,183.

5. In regard to claim 31, Chow discloses all of the claimed limitations as mentioned above except a step of attaching solder balls to the substrate.

Hoffman, in fig. 1, discloses an analogous semiconductor package, optical device, with optical chip 108 on a substrate 102, bonding wires 118. Hoffman further discloses a step of attaching solder balls 126A to the substrate in order to carry out electrical connections from the chip to the external devices since the shape of the solder ball, round, eases the electrical contacts. See also col.5, lines 35-50.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to attach electrical connection device such solder balls

in order to carry out electrical connections from the chip to the external devices since the shape of the solder ball, round, eases the electrical contacts.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan W. Ha whose telephone number is (571) 272-1707. The examiner can normally be reached on M-TH 8:00-7:00(EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nathan Ha
June 24, 2004

LONG PHAM
PRIMARY EXAMINER